VAN RV-4
SEMI SCALE SPORT MODEL

VH-NOJ

Assembly
and
Operations Manual

Please review this manual throughly
Before assembling or Operating
The
VMAR VAN RV-4
Semi scale sport model

We've used our ULTRA TOUGH POLYCOTE ECS Enhanced Covering System for this Model

VMAR™

POLYCOTE™ ECS
ENHANCED COVERING SYSTEM

POLYCOTE ECS ENHANCED COVERING SYSTEM

Liability Disclaimer

It is important that the following liability disclaimer be

READ BEFORE ASSEMBLING OR USING THIS PRODUCT.

Model airplanes, model engines, model engine fuel, propellers and products such as the VMAR VAN RV-4 semi scale sport model can be hazardous if improperly used. Be cautious and follow all safety recommendations when using your Model . Keep hands, tools, clothing and all foreign objects well clear of engines when they are operating. Take particular care to safeguard and protect your eyes and fingers and the eyes and fingers of other persons who may be nearby. Use only a good quality propeller that has no cracks or flaws . Stay clear of the propeller and stay clear of the plane of rotation defined by the propeller.

The Manufacturer, Distributor, Retailer and/or other suppliers of this product expressly disclaim any warranties or representations, either expressed or implied, including but not limited to implied warranties of fitness for the purposes of achieving and sustaining remotely controlled flight.

In no event will the Manufacturer, Distributor, Retailer and/or other suppliers of this product have any obligation arising from contract or tort, or for loss of revenue or profit, or for indirect, special, incidental, consequential or other damages arising from the use of this product.

In purchasing and/or using this product, the user accepts all responsibility for its use and accepts all liability associated with such use.

Proceeding with assembly and use of this product
Indicates
Agreement With and Acceptance of the Liability Disclaimer .

CAUTION.

A Remote Control Model Aircraft is not a toy. It is a flying model that functions much like a full size airplane. If you do not assemble and operate this product properly you can cause injury to yourself and others and damage property. DO NOT FLY this model if you are not qualified.

You are ultimately responsible for the mechanical, aeronautical and electrical integrity of this model and it's structure, control surfaces, hinges, linkages, covering, engine, radio, wiring, battery and all other components check all components before and after each flight. Do not fly until it's right!

INTRODUCTION

Thank you for purchasing a VMAR product. VMAR Manufacturing is committed to delivering superior value to the RC modeler. Your new VMAR VAN RV-4 is the market leader in features, ease of use and flexibility. Please review these instructions before beginning the simple assembly procedure.

We've used metric measurements throughout these instructions. We know that some of you like metric while others think that furlongs per fortnight makes a nifty velocity indicator. If you are in the furlong camp, bear with us.... It's not a big deal...3 millimeters is stated as 3mm and 3mm is about 1/8 of an inch. Fire up your calculator and you will find that 25.4 mm makes an inch. In places where you have to actually set up something according to a recommended measurement, we've listed an approximate imperial measurement in inches in brackets.

Whenever we've used the directional terms left or right , they are with respect to the model when viewed as you would when sitting in the cockpit...that is when viewed from the back looking forward.

INDEX.

CHECK OUT THE CONTENTS.

You've taken the lid off the box and grabbed the instruction booklet…you are about 6-8 hours away being ready to go flying! Now is the time to look over what's in the box. Please go through the contents and make sure nothing has been damaged in shipping. Damage or missing components must be reported to your vendor BEFORE any assembly begins. Please DO NOT START if something is damaged or missing. As you can imagine, once you join the wing halves or install your radio or engine your options for returns are very limited. Your vendor will not be able to provide you with exchanges or replacements of parts that have been assembled. DO NOT START UNLESS IT'S RIGHT!

CHECK OFF COMPONENTS AND PARTS INCLUDED.

Maijor components and sub-assemblies

1 Fuselage
2 Wing halves (left and right)
1 Vertical stabilizer with pre-installed rudder.
1 Horizontal stabilizer with pre-installed elevator .
1 Fiber glass cowl
1 Fiberglass main landing gear
1 Documentation set including instruction booklet
1 Set of patch and/or trim sheets if required
1 Master bag

Contents of master bag

2 Engine mount T-beams (aluminum) with allen screws
2 Ulatralight treaded wheels
1 Fibreglass main landing gear
1 Main landing gear parts bag
1 Wheel pants and landing gear fairing bag
1 Wing parts bag
1 Spinner parts bag
1 Control horn parts bag
1 Tail wheel parts bag
1 Miscellaneous parts bag
1 Spare parts bag

Contents of main landing gear parts bag

4 mounting screws
2 Axle assemblies with wheel collars

Contents of wheel pants and landing gear fairing bag

2 landing gear fairings
2 Wheel pants

Contents of wing parts bag

1 Wood spar joiner
2 Wood alignment dowels
1 Small roil of wing joint tape
2 Aileron control rod assemblies with clevises
1 Flap control rod assembly with clevises (for 1 servo operation)
2 Flap control rod assemblies with clevises (for 2 servos operation)
2 Plastic wing mouting bolts.

Contents of spinner parts bag

1 spinner with allen screws
1 Allen wrench
1 Spinner shaft collet set

Contents of control horn parts bag

5 Metal bolts 3mm x 35-40mm
5 Metal nuts 3mm
5 Plastic control horns
5 Plastic T - nuts
5 Plastic beveled washers

Contents of tail wheel parts bag

1 Pre-assembled wire, wheel and bracked assembly
2 Mounting screws

Contents of miscellaneous parts bag

2 wood guide blocks with slot for control rod support
1 Allen wrench for control rod EZ connector of fitted

Contents of spare parts bag

Assortment of extra spare parts that are not required but may come in handy in service

In addition to the items in the parts bags the following items have been pre-installed or placed into the fuselage at the factory.

1 Fuel tank assembly with stopper, clunk and pre-bent metal tubing

1 Universal adjustable servo tray with mounting screws and slider plates control rod assemblies including connecting hardware.

CHECK OFF TOOLS AND SHOP MATERIALS NEEDED.

These tools and shop materials are not included and are required to complete and operate your VAN RV-4 and most other remote control aircraft. For some specific recommendations and part numbers please see the attached listing of tools and materials available in your market area.

- Clean and flat table or work surface approximately 600 x 1800 mm (24 x 72 in.)
- 2.5 mm ball socket screw driver or Allen wrench
- 3.0 mm ball socket screw driver or Allen wrench
- 4.0 mm ball socket screw driver or Allen wrench
- Phillips (cross head) screw driver small size
- Phillips (cross head) screw driver medium size
- Flat blade screw diver medium size
- Low tack masking tape, ruler or tape measure
- Side (" wire") cutters
- Pencil, pliers, hobby knife with #11 blade
- 30 minute Epoxy and 240 grit sandpaper
- Silicon Based Sealant (Dap – A – Goo)
- Epoxy mixing dishes, brushes and sticks
- Paper towels
- Rubbing alcohol
- Crescent wrench (optional)
- Heat gun and heat iron for covering (optional for cov ering touch up)

CHECK OFF OTHER ITEMS NEEDED TO COMPLETE VMAR VAN RV-4 SEMI SCALE SPORT MODEL

These items are not included and are required to complete and operate your VMAR MODEL and most other remote control aircraft.

Medium fuel tubing appropriate for your choice of engine and fuel. 500 – 750 mm (24-36 in.)

Liquid thread locker

RC FM radio with at least four channels of control and on a frequency appropriate for your market area.

Five servos compatible with the RC FM Radio. Servos generally are sold with new radio systems

External Switch Actuator appropriate for your radio system (optional)

Engine and muffler suitable for use in a remote control model aircraft. A two stroke glow fuel .40 -.53 cubic inch engine is recommended.

Propeller suitable for the engine. See the engine instruction manual recommendation for diameter and pitch.

Engine glow plug

Engine glow plug igniter

Engine 4 way wrench

Fuel for the engine

"After run" oil for engine

RC Foam sheeting for wrapping radio receiver and battery pack.

CHECK OFF OPTIONAL EQUIPMENT AND ACCESSORIES.

These items are not included and are not required but make the operation of your VAN RV-4 and most other remote control aircraft easier & more enjoyable.

Power Tote Deluxe field box # VMA-PT109D

Fuel pump and connecting tubing

Fueling valve

Chicken stick or electric starter

Stick on weights

Battery to power electric starter

Battery charger

Power Panel to manage starter and pump if electric.

Extra propellers

Extra Glow Plugs

Misc Tools

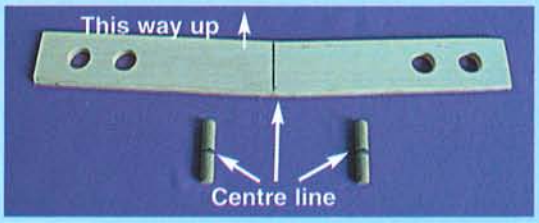
Engine test stand # VMA – ETS120

Stage 1 – WING ASSEMBLY.

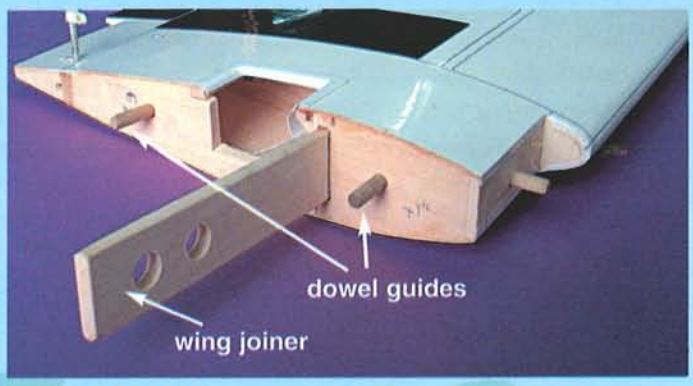
JOINING THE WING HALVES

To join the wing halves you will need the following items :
Wing joiner supplied with kit.
Two short dowel guides supplied with kit
Rolled trim strip supplied with kit
30 minute epoxy
Sandpaper (Coarse 240 grit recommended)
Epoxy brush or stir sticks
Disposable mixing dish for the epoxy
Low tack masking tape to hold the wing in position while the epoxy sets
Pencil
Ruler
Paper towels.

Locate the wing joiner and insert it in one of the wing panels as shown, use a pencil to mark a centre line on the wing joiner and down guide, as shown below, trial fit the second wing panel to ensure a good fit



1.1 Note orientation of wing joiner and dowel guide



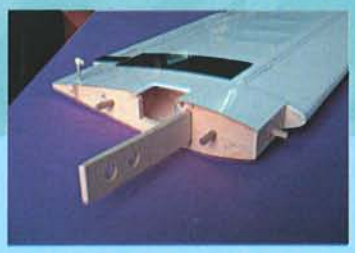
1.2 Trial fit the wing joiner and dowel guides

Stage 2

2.1 Apply epoxy to one end of wing joiner

Apply plenty of 30 mimute epoxy to one end of the wing joiner, using a stir stick or epoxy brush. Carefully insert the joiner into the first wing panel as shown in the sequence below, the wipe off the excess glue that squeezes out of the joint with a cloth or tissue. Repeat this process several times to ensure that the wing joiner and cavity are well coated in epoxy.
Do not use 5 minute epoxy to join the wings

2.2 Carefully insert the joiner... Also the dowel guide



2.3 ... all the way into the centre line

2.4 Wipe off the excess epoxy

Stage 3

3.1 Apply plenty of glue 30 minute epoxy

When the glue has cured in Stage 2, trial fit the second wing panel onto the first to ensure that the two panels fit without an excessive gap.

Now apply plenty of epoxy to the joiner and wing rib where it will join the second wing panel of epoxy. Use 30 minutes epoxy to ensure a strong bond and give yoursefl plenty of working time. As with the wing joiner, the epoxy should ooze from joint and the excess cleaned off with a rag or tissue before it cures.

Use low tack masking tape to hold the two panels together until the glue cures.

3.2 Align the two wing panels

3.3 Slowly close the gap

3.4 Use tape to hold tightly together

Stage 4

Once the glue has cured completely (allow several hours at least), the tape can be removed from the wing panels. To cover the joint in the wings, a length of wing joiner tape is supplied. Starting from the upperside, stick the tape centrally over the joint ensuring that it is pressed down firmly as you work around the wing. Wrap the tape all the way round the wing joint in one piece, starting and finishing at the flap servo cutout in the top of the wing.

4.1 Applying tape over the joint, starting here

4.2 Carry on over the bottom of wing press down firmly as you go

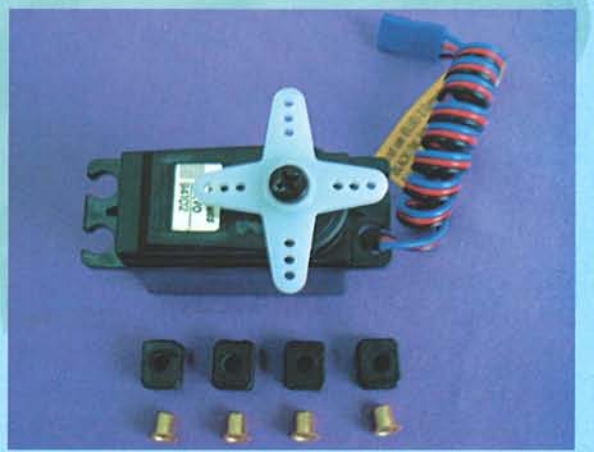
4.3 Trim off the excess here

FITTING AILERON SERVOS

Stage 5

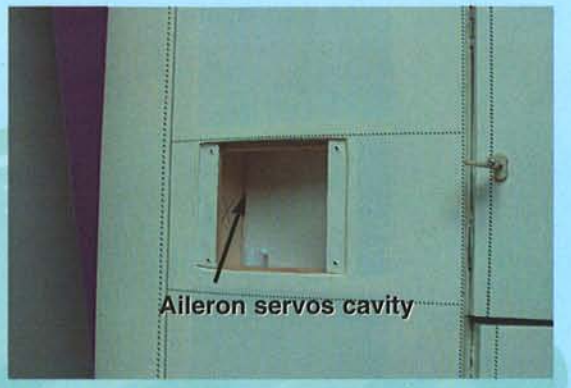
To install the aileron servos into the wing you will need the following items :

- Servos
- Servos mounting screws and grommets as supplied with servos.
- Servo control arms as supplied with the servos.
- Two aileron control rod assemblies supplied with the kit. The assemblies consist of a metal rod with a plastic clevis screwed onto both ends.
- Low tack masking tape.
- 2 aileron control horn assemblies

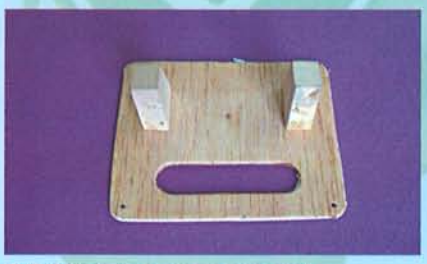


5.1 Prepare the servos by fitting the rubber grommets & ferrules supplied with your radio

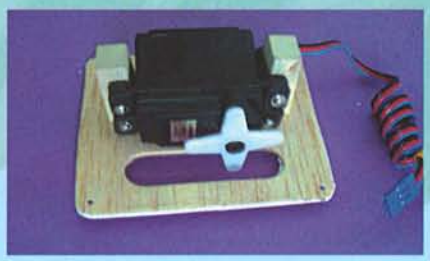
Carefully remove the white cover plates from the aileron servo cavities. Ensure you know which cover plate is for the right wing and which is for the left. Remove the white cover plates and retain the mounting screws. Notice that there are wooden servo rails pre-installed into each servo cavity end. Locate the wiring harness tubes that are protruding slightly into each aileron servo cavity. The tube can be moved slightly at this point. Check out the other end of each tube for a clean position and then using C/A glue secure the wiring harness tubes at the aileron servo cavity end.
Install a servo in each aileron servo cavity and connect the servo wire to the servo extension wires and run the extension wires through wiring harness tubes to the centre of the wing
Install the aileron control horns



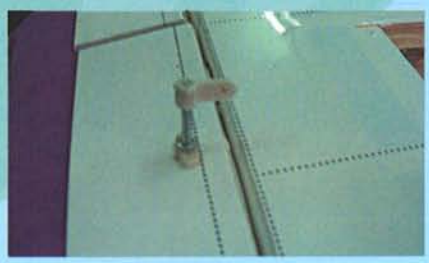
5.1 Aileron servos location



5.2 Aileron servos mount



5.2 Srew servo in position



5.3 Install aileron control horn

Stage 6

Step 1 Consult your radio instruction manual and center each aileron servos by plugging it into the aileron channel in the receiver. Turn on the transmitter and then the receiver. Center the aileron trim lever on the transmitter. Remove the servo arm mounting screw and the servo arm.

Step 2 Mount the servo arm back on the servo. Position the arm to be parallel with the back edge of the wing. Screw the arm into place with the servo arm mounting screw supplied with the servo.

Locate the two aileron control rods in the hardware bag. Ensure the clevises are screwed well onto the threaded portion of the rod. Rotate and tug aggressively on the clevises and ensure that they are not loose on the rods.

Tape the ailerons into their neutral position so that they are even with the trailing edge of the wing and not pointing either up or down.

Step 3 Ensure that the aileron control horns are screwed onto the threaded aileron control horn bolts and that both control horns are in approximately the same place on their respective bolts.

Step 4 Connect the aileron servo rods to the aileron control horns. If one of the two clevises on each rod has a metal pin or screw, attach that clevis to the servo output arm.

Step 5 Connect the other clevis to the servo output arm

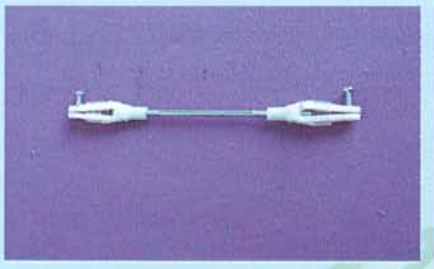
Step 6 Remove the masking tape holding the ailerons.

Step 7 In the case of computer radios the servos together by connecting them to the appropiate receiver channel . In the case of analog radios couple the servos together using a Y harness

Step 8 Turn on your radio and activate the ailerons, using the aileron stick and ensure a smooth full motion can be achieved.

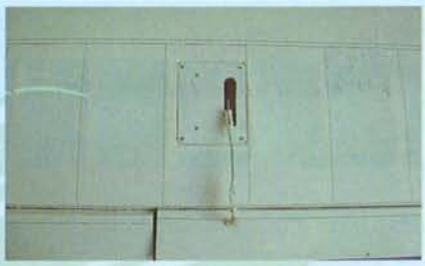
Step 9 With the wing top side up and viewed from the back, ensure that moving the transmitter aileron stick to the left raises the left aileron and lowers the right aileron. Movement of the stick to the left will roll the aircraft to the left. (Counterclockwise roll of the wing when viewed from the back).

Step 10 With the wing top side up and viewed from the back, ensure that moving the transmitter aileron stick to the right raises the right aileron and lowers the left aileron. Movement of the stick to the right will roll the aircraft to the right.



6.1 Aileron control rod assembly

6.2 Aileron control horn assembly



6.3 Aileron control installed

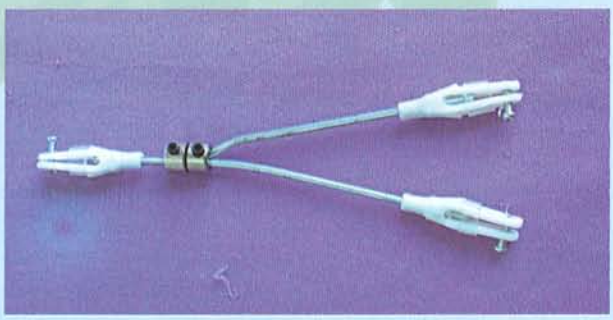
FITTING FLAP SERVOS

Stage 7

Two flap servos can be used or a single flap servo can activate both flaps. We shown a single servo installation here. If using two servos, couple them using a Y harness

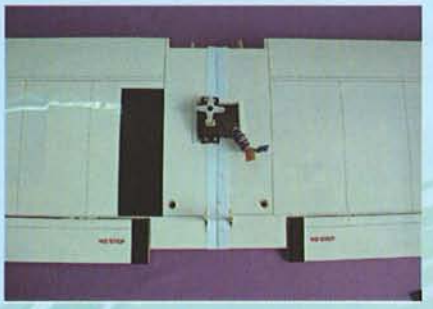
To install the aileron servo into the wing you will need the following items :

- Servo
- Servo mounting screws and grommets as supplied with the servo.
- Servo control arm as supplied with the servo.
- Flap control rod assembly
- Low tack masking tape.

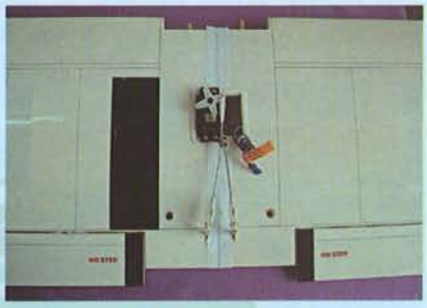


7.1 Flap control rod assembly

7.2 Flap servo location



7.3 Flap servo position



7.4 Final flap instalation

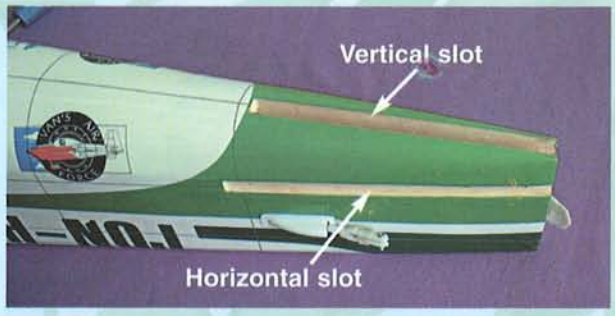
7.5 Flap down

7.6 Flap up

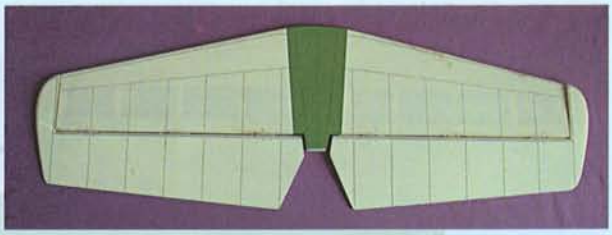
FITTING THE HORZONTAL AND VERTICAL STABILIZERS

Stage 8

To install the stabilizers to the fuselage you will need.
- Fuselage
- Vertical stabilizers with pre-installed rudder
- Horizontal stabilizers with pre-installed elevator



The completed fuselage slot should look like this



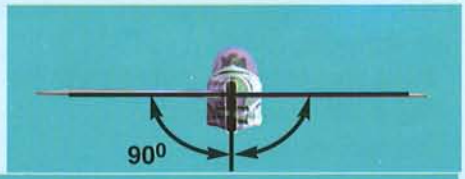
Horizontal stabilizers with pre-installed elevator

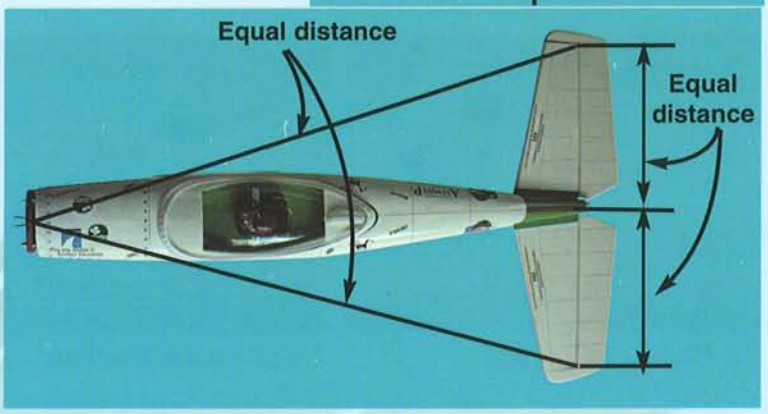
Vertical stabilizers with pre-installed rudder

Stage 9

Check the fit of the horizontal stabilizer in its slot. Make sure the tail is square and centred to the fuselage by taking measurements as shown in the diagrams on the right, but don't glue anything yet.

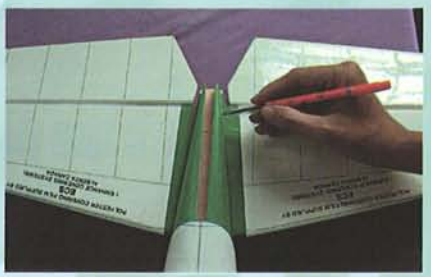
9.1 Trial fit the horizontal stabilizer in its slot



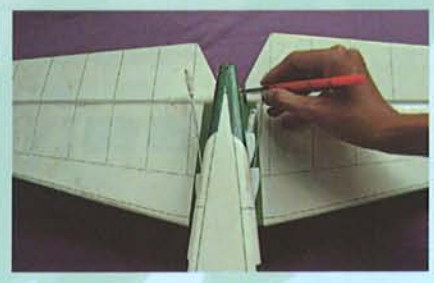


Stage 10

With the horizontal stabilizer correctly aligned, mark the shape of the fuselage on the top and bottom of the tailplane using a water solublenon-permanent felt-tip pen as shown here.



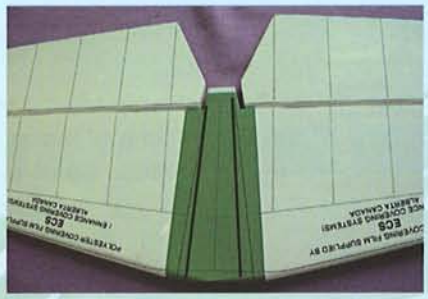
10.1 Mark the top of the horizontal stabilizer



10.2 Followed by the bottom

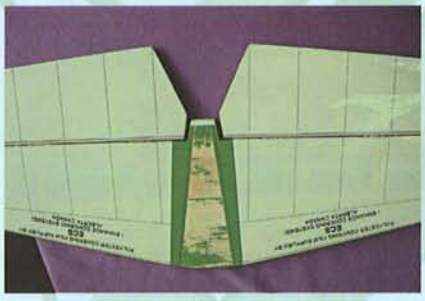
Stage 11

Now remove the horizontal stabilizer and, using a sharp knife and a ruler CAREFULLY cut 2mm inside the marked lines and remove the covering on the top and bottom of the tail as shown. Make sure you only cut the film and not the wood, otherwise the horizontal stabilizer wiil be severely weakened.

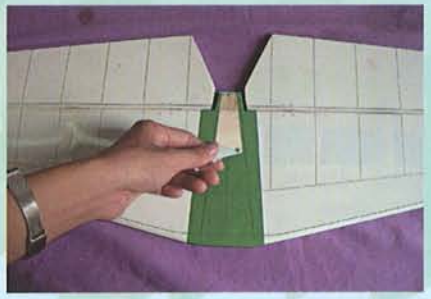


11.1 Marked lines on horizontal stab

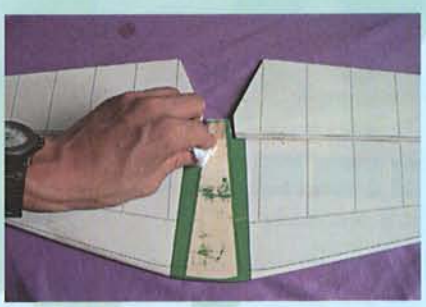
11.2 Cutting inside the lines



11.3 Removed covering from top surface



11.4 Exactly the same underneath

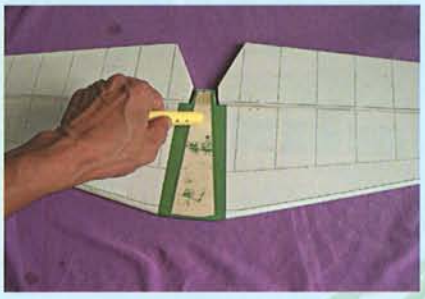


11.5 Clean off any traces of pen

Stage 12

Now apply sufifciant epoxy to the top and bottom of the horizontal stabilizer. Use 30 minute epoxy to ensure a strong bond and give yourself plenty of working time.

Insert the horizontal stabilizerl in its slot in the fuselage and re-check the alignment as in Stage 9. Excess epoxy should be cleaned off with a rag or tissue before it cures.



12.1 Apply plenty of epoxy

12.2 Slide the horizontal stabilizer in place

12.3 Wipe off excess epoxy

FITTING THE VERTICAL STABILIZER WITH RUDDER

Stage 13

Check the fit of the vertical stabilizer in its slot. To make sure that it is glued square to the horizontal stabilizer and fuselage

13.1 Trial fit the vertical stabilizer onto fuselage.

Stage 14

Mark the shape of the fuselage on the left and right sides of the vertical stabilizer using a felt-tip pen. Now remove the vertical stabilizer and, using a sharp knife & ruler, CAREFULLY cut just 2mm inside the marked lines and remove the covering on both sides of the fin, just as you did with the horizontal stabilizer, taking sure you only press hard enough to cut the covering, not the vertical stabilizer.

13.2 Mark both sides of the vertical stabilizer

13.3 Carefully cut through the covering

13.4 Remove covering from both sides

Stage 15

Now apply sufficient epoxy to both sides and the bottom of the vertical stabilizer. Use 30 minute epoxy to ensure a strong bond and give yourself plenty of working time. Insert the vertical stabilizer in its slot in the fuselage and re-check the alignment. Excess adhesive should be cleaned off with a rag or tissue before it cures.

15.1 Apply plenty of epoxy

15.2 Slide the fin in place

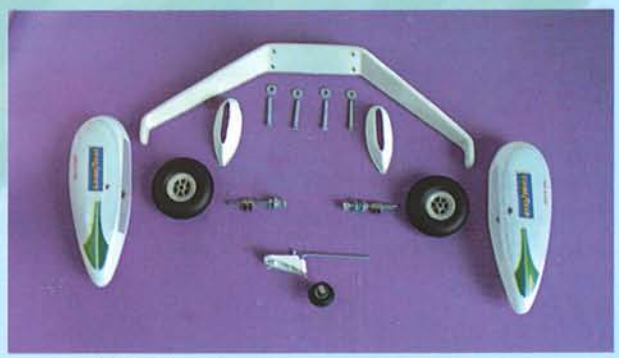
15.3 Insert the pre-installed hinge to the rudder

FITTING THE MAIN LANDING GEAR

Stage 16

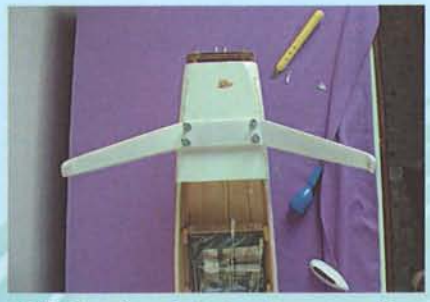
Identify the main landing gear components shown below

- 1 fiberglass main landing gear
- 2 axle assembly
- 2 main wheels (60mm x 20mm)
- 2 wheels pants
- 2 Landing gear fairing
- 4 sheet metal screws 5 x 35 mm with washers
- 1 tail wheel assembly with 2 (3 x 15mm) sheet metal screws.



16.1 Main landing gear components

16.2 Turn over the fuselage to located the 4 pre-drilled main landing gear mounting holes



16.3 Use 4 metal sheet screws (5 x 35mm) to mount the main landing gear onto the fuselage

16.4 Install the landing gear fairing as shown

16.5 Use thick CA glue to glue the fairing to the fuselage

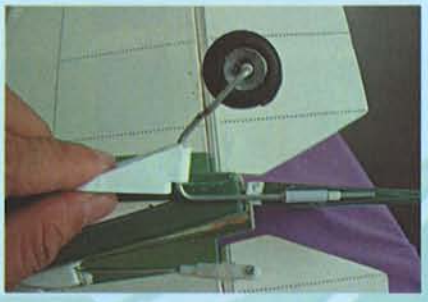
16.6 Install the axle and wheel

16.7 Install the wheel pan and wheel to the main landing gear

FITTING THE TAIL WHEEL

Stage 17

Install the tail wheel assembly. Note that the tail wheel assembly has a loose wire end. Slide the loose wire end into the sleeve tube that has been installed into bottom of the rudder. Position the plastic bracket on the bottom of the fuselage. Mark the location of the screw holes. Tap the holes with the screws and then fasten the plastic bracket to the fuselage. See the illustration below.



17.1 Insert the tail wheel steering wire into the steering guide tube

17.2 Screw the tail wheel assembly to the fuselage

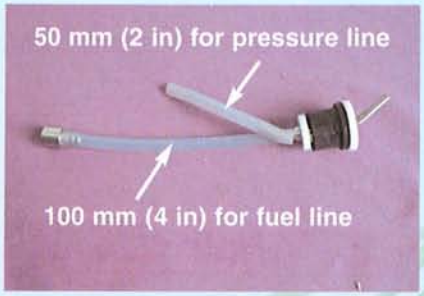
17.3 Trim off the excess tail steering wire

FITTING THE FUEL TANK

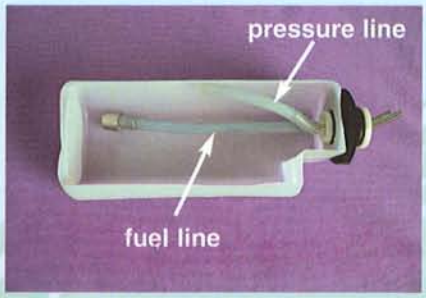
Stage 18

To assemble the fuel tank you will need the following items:

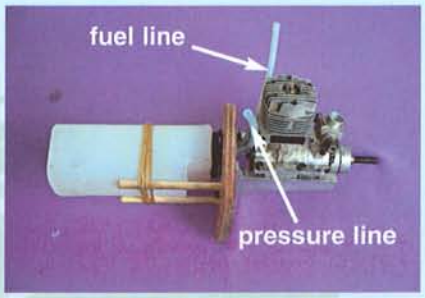
- The fuel tank and fuel stopper assembly (supplied)
- The clunk (supplied)
- About 7" (20 cm) of medium ID silicone fuel line (DUB 197 or similar)
- Cross head Philips screw driver



18.1 Use 100 mm (4 in) for fuel line and 50 mm (2 in) for pressure line



18.2 Illustration of fuel line positioning inside the tank



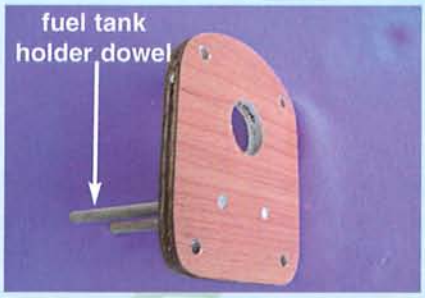
18.3 Fuel tank installed on the power module

INSTALLING THE ENGINE

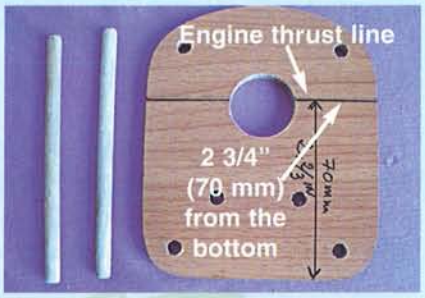
Stage 19

The engine and the fuel tank are installed onto the power module. First remove the power module from the fuselage by removing the 4 nuts & washers

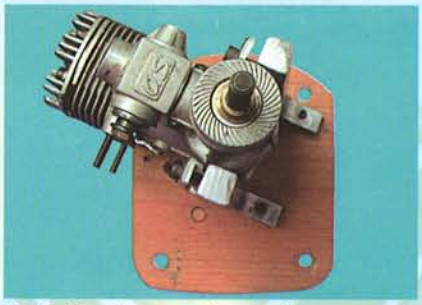
19.1 Aluminum engine mount



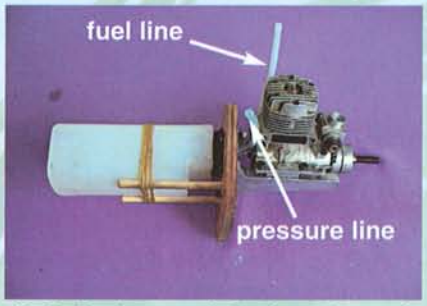
19.2 Power module assembly



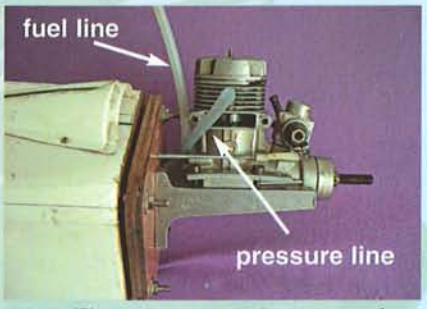
19.3 Engine thrust line



19.4 Engine and engine mount recommentdation orientation.



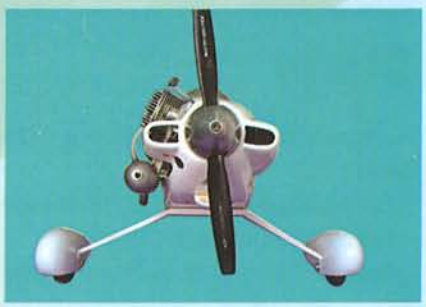
19.5 Engine and fuel tank positioned on the power module



19.6 Throttle control connection to the engine

19.7 See cowl installation tips on page 20 & 21

19.7 Install the muffer and connect the fuel and pressure line



19.8 Install the suitable prop and spinner

FITTING ELEVATOR AND RUDDER CONTROL HORN

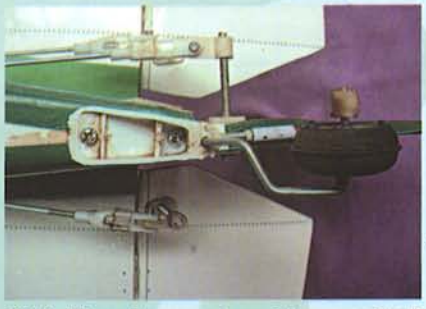
Stage 20

The elevator control is fitled on the underside of both right and left of the elevator halves. Pierce the covering over the pre-drilled hole for the control horns installation as shown.

20.1 Control horn assembly

20.2 Elevator control horn location

20.3 Rudder control horns location

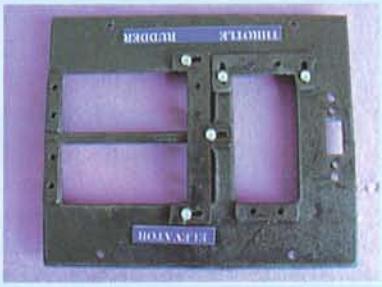


20.4 Elevator and rudder control horn connected to the contrrol rod

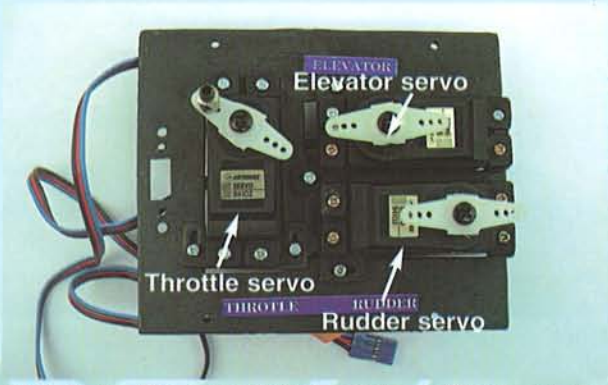
INSTALLING THE SERVOS

Stage 21

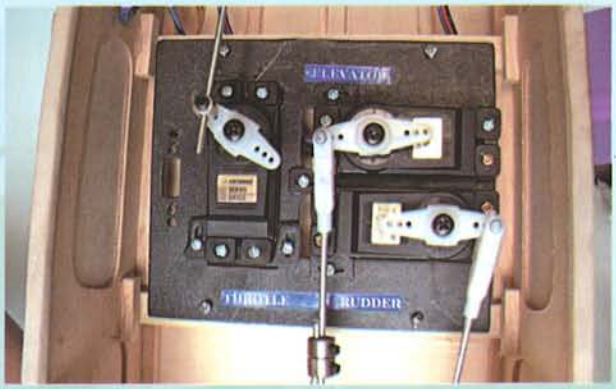
Install the rubber servo grommets and brass ferrules supplied with your radio equipment. The three servos that control the elevator, rudder and throttle are Installed in the servo tray mounted in the fuselage. Remove servo tray from the fuselage, mounting the servos to the servo tray as shown.



21.1 Universal servo mount



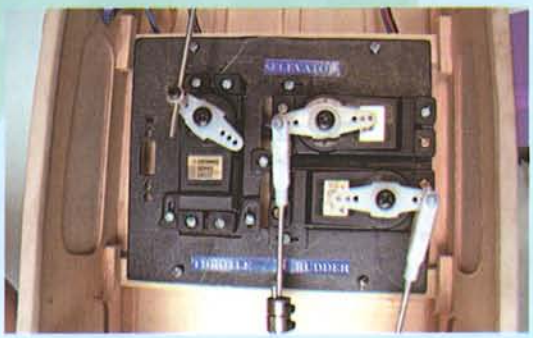
21.2 Note the orientation and positions of the three servos in their tray



21.3 Throttle, elevator and rudder servos connected to their push rod

CONNECTING THE PUSHRODS TO THE THROTTLE, RUDDER AND ELEVATOR SERVOS

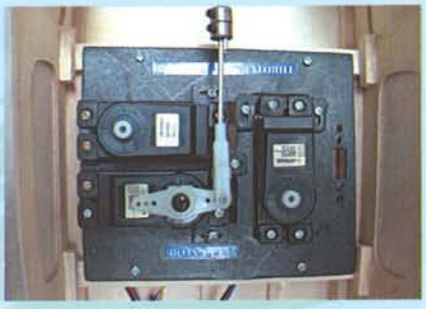
Stage 22



22.1 Consult the picture showing how the throttle, rudder and elevator servos are positioned and connected to the pushrods.

22.2 Pre-installed elevator and rudder pushrod

22.3 Connecting clevise to the servo arm

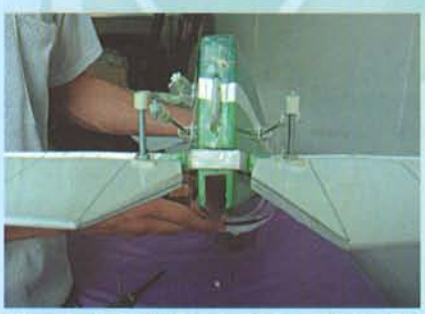


22.4 Connecting the elevator pushrod to the elevator servo arm

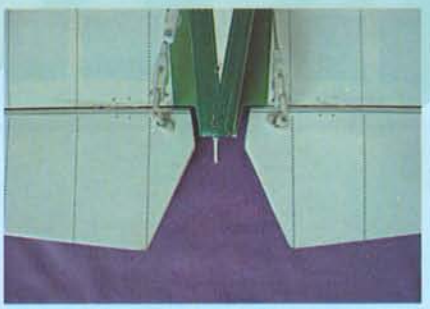
CONNECTING THE PUSHRODS TO THE ELEVATOR

Stage 23

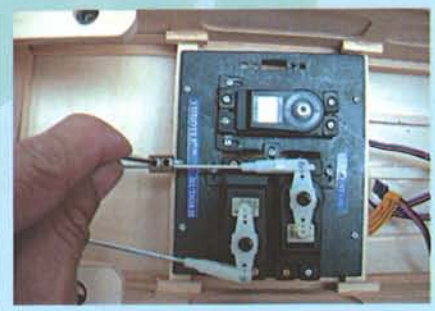
Connect the elevator servo to the receiver and turn on your transmitter. Confirm that the neutral positions of the elevator servo are sustained as per illustration 22.4



23.1 Two independent elevator control horn shown in position



23.2 Connecting the elevator pushrods to the control horns

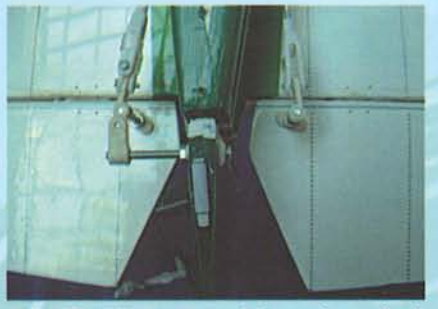


23.3 Loosen collars to align elevator surfaces. Tighten collars securely

CONNECTING THE PUSHRODS TO THE RUDDER

Stage 24

Connect the rudder servo to the receiver and turn on your transmitter. Confirm that the neutral positions of the rudder servo are sustained as per illustration 22.4



24.1 Rudder control horn installed and shown in position

24.2 Connecting the rudder pushrod to the rudder control horn

CONNECTING THE THROTTLE CONTROL

Stage 25

Connect the clevis to the engine throttle arm at roughly half throttle. Look into the throat of the engine carburetor as you rotage the throttle arm and select a position where the throttle opening is about hafl what it is when fully open.

25.1 Throttle control rod

25.2 Throttle control rod connected to the engine throttle arm

ADJUST CONTROL SURFACE THROW LIMITS.

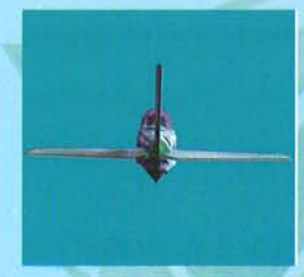
Stage 26

Adjust the deflection of the control surfaces to match the specifications on page 19
You can reduce the amount of throw by doing either or both of the following:
From the servo end, move the clevis or EZ connector to a hole in the servo arm that is closer to the servo output shaft.
From the control horn end, move the horn out further on the threaded bolts. Always confirm that the horn is still thoroughly engaged with the threaded bolt after you have adjusted it.

FINAL R/C SET-UP

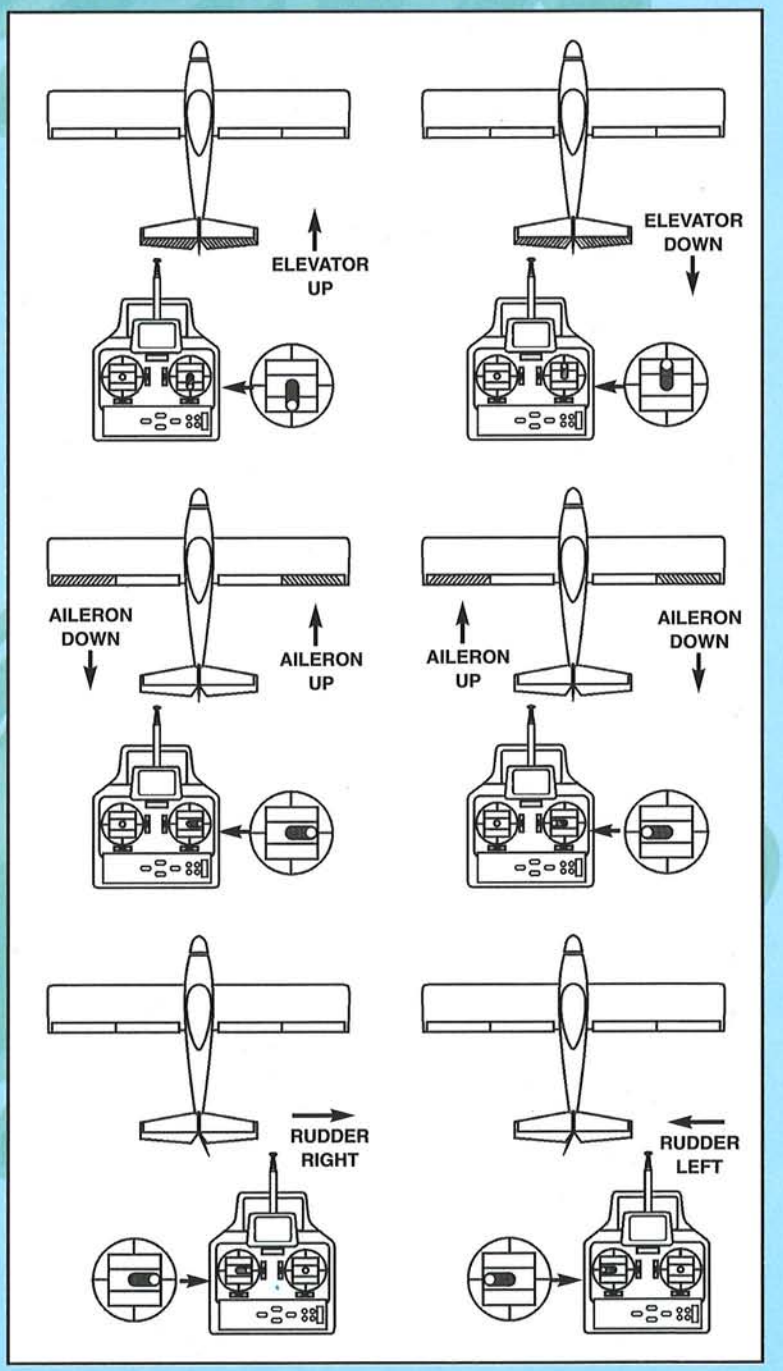
Stage 27

Before starting the final set-up of the model, switch on the radio and ensure that all trims are in their neutral positions. Check that the ailerons, elevator and rudder are centred. If any adjustments are needed, do these by uncoupling the relevant clevis and turning it clockwise to shorten the linkage or couter - clockwise to lenthen it. Only when each control surface has been centred mechanically in this way should you begin adjusting the surface movement (or throw)



Now confirm that the control surfaces are moving in the correct direction. Use the servo reversing swiches on your transmitter to reverse the direction of a servo if necessary. The most popular transmitter mode (with the throttle on the left, with ailerons and elevator on the right) is shown here.

Stage 28



Stage 29

INSTALLING THE RECEIVER BATTERY

29.1 Consult your radio manual for instructions
about hooking up your receiver battery, receiver and switch harness.

29.2 Wrap the battery pack securely in foam suitable for RC equipment and wrap the foam insulated pack in a plastic bag or cling wrap.

29.3 Thread the battery pack connector back through from beneath the fuel tank to the radio compartment by passing the battery connector through an opening beside the fuel tank.

29.4 Connect the battery connector to your radio system according to the radio manual.

Stage 30

INSTALLING THE RECEIVER

30.1 Consult your radio manual for instructions about hooking up your receiver.

30.2 Plan where you are going to put the receiver with consideration for routing the antenna safely.

30.3 Wrap the receiver securely in foam suitable for RC equipment and wrap the foam insulated receiver in a plastic bag or cling wrap.

30.4 Generally in the absence of specific instructions from the radio manufacturer, it is recommended that the receiver should be placed where it is least likely to have impact during a crash. Keep the battery pack and other heavy loose items ahead of the receiver.

Stage 31

COMFIRM RADIO OPERATION

31.1 Consult your radio manual for instructions about testing and operating your radio system.

31.2 Pay particular attention to charging your radio system batteries and range testing the system before and after each flight.

Check that all controls are working correctly
before and after each flight.

Stage 32

BALANCING THE AIRCRAFT.

The CG for your RV - 4 is located at 80 to 90 mm (3 1/4 " to 3.1/2 inch) back from the leading edge of the wing when the wing has been attached to the fuselage.
For the initial flight, the CG should be located at 3 1/4" (80mm) back from the leading edge of the wing when the wing has been attached to the fuselage.
The CG is measured with the engine, radio gear and all other components installed but WITH NO FUEL IN THE TANK.
Set up the CG as it will be when you fly it BUT WITH NO FUEL IN THE TANK.
It is very important to have the CG correct. Flying your model with the CG too far will likely lead to loss control and a crash.
If you discover that after you have assembled your model and installed your radio and engine that the CG is incorrect you must bring the CG to the correct location by doing the following BEFORE FLYING :

- Move the battery pack fore or aft.
- Move other components fore or aft.
- Change engine to a lighter or heavier model.
- Add weight to the nose or tail. If adding it to the nose, try to make it useful by going to a heavier duty engine or adding a spinner with a heavy metal backing plate. As a last resort, add stick on "dead" weight where appropriate.

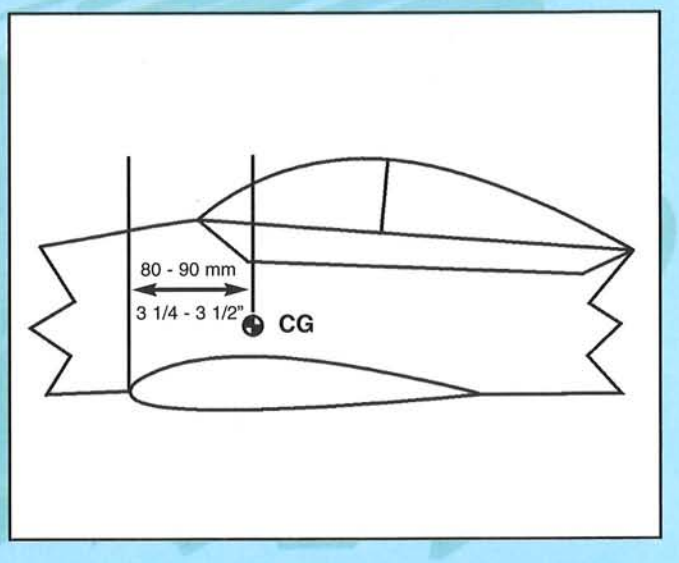
Stage 33

CONFIRM MECHANICAL INTEGRITY

33.1 Once you have confirmed that the CG is correct, you should do a thorough review of the entire model before your first flight. Check everything twice! Every hook up, every coupling, everything! Do it twice!!

33.2 Before your first flight , have an experienced flyer review your work. Do not fly your model until it has been checked out by a third party who knows how to fly and how to set up a model aircraft

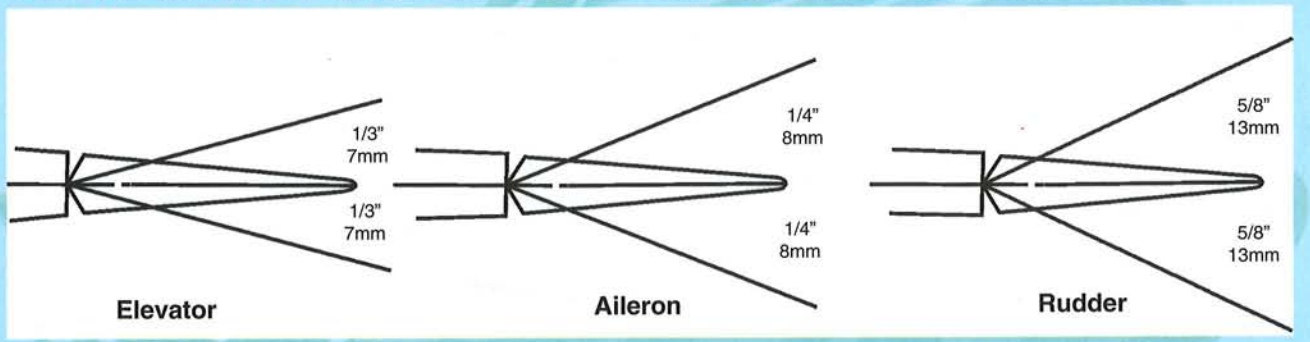
33.3 Once you have completed your first flight, get in the habit of checking your model over before and after each flight! Don't fly if you find something that is not right!



NOTE : The throws are measured at the widest part of the elevator, rudder and aileron. Adjust the position of the pushrods at the control/servo horns to control the amount of throw. You may also use the ATV's if your transmitter has them but the mechanical linkages should still be set so that the ATV's are near 100% for best servo resolution.

	High rate	Low rate
ELEVATOR	1/2 " (12mm) up	1/3" (7mm) up
	1/2 " (12mm) down	1/3" (7mm) down
RUDDER	1 " (25mm) right	5/8" (13mm) right
	1" (25mm) left	5/8" (13mm) left
AILERON	3/8" (11mm) up	1/4" (8mm) up
	3/8" (11mm) down	1/4" (8mm) down.

Note: If your radio does not have dual rates, then set the control surfaces to move al the low rate throws.



Cowl Installation Tips

You may have your own method to adapt and install the cowl to fit your model, your choice of engine and your choice of engine orientation... here is one method to add to your bag of tricks!

1) Use a sheet of card stock or better yet a sheet of clear thin plastic like that used to protect documents. Using a clear sheet is strongly recommended.

2) Wrap the sheet as close as possible around the cowl, preferably tapered slightly towards the front. Tape the sheet so that it stays in cylindrical shape approximating the cowl. Trim the aft edge of the sheet to approximately match the aft edge of the cowl. Trim the front edge of the sheet to approximately match the front edge of the cowl. Put a couple of registration marks on the dummy cowl and real cowl so that you can apply the dummy cow over the real cowl and real cowl in a similar manner again. Now remove the sheet from the cowl, in once piece if possible. If it is not possible to remove the sheet in one piece, use a felt tip pen to mark the sheet so that you can untape it, the remove it from the cowl and then retape it back together into the cylindrical approximation of the cowl. In effect you now have a rough dummy cowl that can be used to make a template to help you later fit the real cowl.

3) Now install the engine on the engine mounts and measure the distance from the back of the engine mount to the front of the thrust washer

4) Draw a vertical line on the forward face of the firewall so that it is in the middle of the firewall and at right angles to the horizontal line drawn on the firewall at the factory. If there is no horizontal line on the firewall, check the set up specs for this model and draw the horizontal thrustline at the location indicated.

5) Install the real cowl on the model and slide the cowl back until the distance from the firewall to the cowl bose ring hole is similar to the distance measured in step 4 AND that at least 1/4 in (6mm) of the edge of the cowl overlaps the front of the fuselage. Carefully square the cowl with respect to the fuselage so that it looks aligned from the top, sides, bottom and front. Look through the cowl nose ring hole and try to align the centre of the cowl nose ring hole with the intersection of the vertical and horizontal thrust lines onthe front face of the power module. Measure the distance from the forward face of the firewall to the nose ring hole in the cowl. Use low tack masking tape to hold the cowl loosely in place while you adjust it. Once you have the cowl squared up and set where you want if fore and aft, apply a line of low tack masking tape around the circumference of the fuselage so that the forward edge of the masking tape just butts up against theaft edge og the cowl.

6) Remove the real cowl from the model.

7) Install your engine mount and engine and muffer onto the model. Orient the engine to the possition you want...i.e upright, rotated 45 degrees inverted ect. Make sure the muffer and the carburetor are installed. When selecting which orientation you want for the engine you need to keep inmind operational considerations... the muffer for examle must clear the sides of the fuselage by at least 5mm and carburetor throttle arm must be connectable to the thottle control rod running forward through the firewall from the throttle servo. Lastly, the fuel lines coming through the stopper hole in the run to the muffer pressure tap and the carburetor fuel nipple.

8) Once you have positioned your engine mount and engine, secure them to the forward firewall of the power module and install the forward firewall onto the model using the four mounting studs, nuts and washers. We recommend setting the forward firewall at zero degrees offset thrust for now. Use the same number of washers and nuts on all four studs. You can adjust a bit of right or down thrust into the firewall later if required.

9) Remove the muffer and carburetor from the engine. Set the muffer and carburetor aside. Be careful not to lose any parts.

10) Now try to fit the dummy cowl on to the fuselage. You will find that the dummy cowl will likely be obstructed by the engine as you try to install it. Assuming you are using the recommended clear sheet material you will be able to see whre the obstruction begins. Using a left tip marker mark the area onthe dummy cowl to fit over the engine.

11) Remove the dummy cowl and cut away the area that you have marked. We suggest cutting away less than you think at first and expanding the cut out area in small incremental steps. Repeat this trial and error process until the dummy cowl can be installed with rear edge of the dummy cowl aligned with the forward edge of the line of tape onthe fuselage. You will have to repeat this process numerous times and we recommend working in small steps. If you overdue a cut, use masking tape to ftll in the over cut area.

12) Once you can install the dummy cowl over the engine, remove the dummy cowl and install the carburetor back on the engine.

13) Now try to fit the dummy cowl on to the fuselage with the carburetor in place. You will find the carburetor-may obstruct the dummy cowl as you try to fit the dummy cowl into place. Mark the arear on the dummy cowl where you have to make a cutout for the carburetor...remove the dummy cowl, cut out the area carefully and try again. Repeat this trial and error process until the dummy cowl can be installed over the engine and carburetor properly. Now check that you have acess to the needle valve and idle mix screws and any other carburetor adjustment settings...cut out access holes and areas to provide access.

14) We are just about done with the dummy cowl work.. one more step! Install the muffer back on to the engine.

15) Now try to fit the dummy cowl on to the fuselage with the muffer in piace. You will find that the muffer will obstruct the dummy cowl as you try to fit the dummy cowl into place. Mark the area on the dummy cowl where you have to make a cutout for the muffer... remove the dummy cowl, cut out the area careflly and try again. Repeat this trail and error process until the dummy cowl can be installed over the engine, Carburetor and muffer properly.

16) Once you have the dummy cowl fitting onto the fuselage over the engine muffer and carburetor you are ready to work on the real cowl. Take the dummy cowl and apply it over the real cowl. Align the registration marks you made earlier. Using a fetl tip non-permanent marker, trace around the inside of the cutout areas of the dummy cowl...transferring the outline of the cutout areas to the real cowl.

17) To carve the cut out areas in the fiberglass cowl we recomment using a half inch drum sander and a Dremel tool. Usee glasses and avoid the fiberglass dust. Wear gloves and a mask. Work in an erea with good ventilation. If you do not have a drum sander and Dremel tool, use a 1/8" drill to make a series of filot holes around the cut area and then enrlage the drill holes until you can insert a rough hand file. Then expand the cut out areas using the file. In either case, start from the interior of a cut out area and work outwards towards the perimeter line you drew on the cowl with the marker. Trial fit the cowl onto the engine and fuselage frequently as you go. Expand the cut out areas until the cowl fits with its aft edge adjacent to the tape line that you applied to the fuselage.

18) Now adjust the alignment of the cowl so that the engine crankshaft is centered in the hole in the front face of the cowl.

19) Remove the tape line from the fuselage and move the cowl fore or aft until the foreward face of the engine thrust washer is just forward of the cowl. Reapply a low tack masking tape line around the circumference of the fuselage so that the forward edge of the tape butts against aft edge of the cowl.

20) Plan on drilling three pilot holes in the cowl for mounting screws. You want the screws to go into centre of edge of the rear firewall not the forward removable firewall. Plan on having one screw go through the rear edge of the top of the cowl and one on each side. Mark the locations of the holes onthe cowl.

21) Drill a 1/32" pilot hole in the cowl and into the edge of the rear firewall. Adjust locations slightly if needed and drill a 1/6" hole. Use three # 2 or # 3 x 1/2" (wood screws to mount the cowl. We recommend drilling oversize holes in the cowl and fitting rubber grommets to provent the screws fron chaffing and expanding the cowl screw holes.

22) Now apply any trim sheets that are specified for this model. Check out the box artwork and instructions. Align the trim lines to the fuselage if required.

Picture of RV - 4 VH NOJ cowl decoration

Parts for this VMAR Model

In the event that you require replacement parts for you VMAR VAN RV - 4, you can order parts from your retailer or from the VMAR On - line store at www.richmondrc.com.

Fuselage	#VMA-R240XF (with servo tray & all rods)
Wing set	#VMA-R240XW (a set of left and right with joiner ect)
Tail set	#VMA-R240XT (contains horizontal and vertical stabilizers)
Cowl	#VMA-R240XL (fiberglass)
Canopy set	#VMA-R240XN (canopy and frame)
Main gear	#VMA-R240XMG (fiberglass main landing gear with axle set)
Wheel pant set	#VMA-R240XWP (with main gear fairing set)
Covering set	#VMA-R240XV (POLYCOTE ECS)
Wing parts bag	#VMA-R240XWPB (spar joiner, aileron rods ect)
Master bag	#VMA-R240XMB (as in kit)

For aftermarket parts and other information related to this model see VMAR On - line at www.richmondrc.com.

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POLYCOTE™ ECS
ENHANCED COVERING SYSTEM

Your VMAR VAN RV - 4 Model is covered in POLYCOTE ECS.
The new ULTRA TOUGH POLYESTER covering from VMAR !

VH-NOJ

NEW!!

WHAT'S IT ALL ABOUT ?

POLYCOTE ECS is an Enhanced Covering System Engineered in Canada and Available only from VMAR. With POLYCOTE ECS the graphics are inside the covering... not stuck on top. No Decals! No Layers! No Strips! No Stripes! VMAR Models using POLYCOTE ECS have very few seams and our proprietary SURE SEAL system ensures that the seams stay down! Best of all, POLYCOTE itself is a totally fuel proof ULTRA TOUGH POLYESTER

POLYCOTE™ ECS
ENHANCED COVERING SYSTEM

POLYCOTE ECS ENHANCED COVERING SYSTEM